



# The Economic Challenge of Reduced Water Consumption

## Summary

**EurEau members support the objective to increase resource efficiency, in particular for water and energy use.**

**Decreasing water consumption has been encouraged for many years across Europe by legislation and by technological progress. This is an economic challenge for water and waste water operators, since most of their costs are fixed but their income is closely linked to consumption.**

**These challenges should be addressed by relevant authorities; otherwise, the economic balance of water services might be compromised as well as the investment capacity. Service levels might suffer in the medium term if appropriate measures are not in place.**

**Tariffs should recover costs. Given that 60-80% of the costs are fixed, measures should guarantee that all fixed costs are recovered, for example by a better reflection in the tariff structure.**

## Recommendations

**While water pricing remains a national/local competence, EurEau wants to stress the need for a holistic view by raising awareness of the economic flipside of water consumption reduction policies.**

**Thus, in its assessment of water pricing to be conducted in 2017, the European Commission should take following into account:**

- ~ **Encourage the setting of tariff structures that allow for cost recovery despite decreasing consumption; i.e. including a significant element of its fixed part, while incentivising for efficiency. This requires strong support for the 3Ts<sup>1</sup> approach, which will ensure that the financing sources to cover the total costs of service are transparent for all.**
- ~ **Develop dedicated financing mechanisms and facilitate the use of EU funds to invest in water and waste water infrastructure.**
- ~ **Raise awareness on possible health and economic risks related to the use of water not coming from the public infrastructure.**



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<sup>1</sup> The three T's are taxes, tariffs and transfers.



## 1. Water operators' role in access to safe and sustainable use of water

Access to affordable water and sanitation is a fundamental human right. Water operators across Europe provide clean, safe drinking water day after day and treat waste water before the water re-enters the water cycle. Water services are increasingly important due to population growth and larger communities. **Water operators also take care of the natural environment and play an active role in the protection of water resources.** It is in the water operators' interests to maintain a sustainable environment, hence to balance the needs of the public water supply, agriculture, energy, the environment and everyone else who needs this precious and vulnerable resource.

**Service operators' investment in drinking water production and waste water treatment** protects public health, a diverse and complex environment, and supports economic growth. Where appropriate, operators promote citizen information programmes to support the sustainable use of water, to invest in increased metering, to provide water-efficient bathroom and kitchen fixtures at little or no cost, and to support educational projects in schools.

However, not everyone is aware of this investment and few people realise **the real costs of providing water and sanitation services.**

**In many countries, the fixed charge for water services paid through water bills does not reflect the fixed costs borne by the operators. These costs are mainly covered by the element of the bill that relates to water consumption (€ per m<sup>3</sup>). This is often a politically-driven partition as a means to reduce water consumption.** Especially in countries where there is no fixed charge at all, a reduction in water consumption means a reduction in income and the capacity for investment. This could threaten the long-term viability of the water operators, and therefore access to quality water services for future generations.<sup>2</sup>

## 2. The importance of a sustainable approach to reducing water consumption

From an environmental point of view, reducing water consumption is a good thing as it saves energy and makes sustainable use of scarce water resources. However, EurEau members would like to draw attention to the need for a careful analysis of the economic and social impacts of doing this and the potential effect on the sustainability of the (level of) services.

**Economic, social and environmental considerations may be compatible provided that water tariff structures are built upon fixed components.** These should depend on the network structure, and that variable tariffs are adapted to consumption levels, local practices and incentives. These components need to be

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<sup>2</sup> Assessment of cost recovery through water pricing, European Environment Agency Technical report, No 16/2013; p. 53 and 89.



addressed sustainably, supported where necessary by regulatory frameworks that allow for environmental or social policy cost recovery. Pricing, for instance, is an effective tool to allow for new capital expenditure even in the eventuality of a decrease in the demand for water. Due to the complexity of ecosystems and their unpredictable variability, **it is important for water operators to always have the financial capacity to maintain and/or to invest in new equipment and infrastructure.**

Another important factor to take into account is the differences in living conditions. Indeed, water use in domestic households is significantly influenced by the number of persons in the household. Basic needs for drinking, cooking, and sanitation also vary according to the standard of living.

### 3. Facts on consumption fluctuation

Overall, there is a **trend towards decreasing water consumption per capita** over time<sup>3</sup>.

This decrease in water consumption can be explained in particular by the **reduction in domestic use** due to better water efficiency of domestic equipment (washing machines, toilet flushers, shower heads...) and, in some regions, higher awareness among consumers of water being a scarce resource. Expenditure elasticity due to the increase of water price per m<sup>3</sup> also has - in some countries - reduced water consumption, mostly for major consumers and above the volume used for basic needs.

On the other hand, periods of very hot and dry weather, which are set to occur more frequently as a result of climate change, are leading to short-term fluctuations and peaks of demand higher than those normally experienced.

The development of alternative water sources, coupled with de-industrialisation in some areas, have, to a lesser extent, impacted water consumption.

### 4. Alternative water sources should not put the sustainability of the public system at stake

In some countries, measures including increased water price per m<sup>3</sup> encourage industrial, agricultural and domestic users to switch to private water sources such as:

- ~ collecting rainwater
- ~ digging private wells or abstracting surface water
- ~ private desalination systems in coastal areas.

This in turn causes a decrease in the water demand from the public service. As public service operators always have to guarantee quality and compliance with the regulatory framework, the citizens using alternative water sources have to pay special attention to the water quality. At the same time the operators also need to be

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<sup>3</sup> OECD (2016), *Water Governance in Cities*, OECD Publishing, Paris - pp 45-46.



aware of the possible consequences of this switch to private water sources.

Indeed, irregular demand (connections to the water network are used by consumers as an 'insurance') may lead to problems such as stagnation or lower water quality due to reduced flow. So for health reasons, disconnection from the public system and/or use of alternative sources such as private wells should be regulated (in Poland and Slovenia, simultaneous connection to the public network and to an alternative water source is restricted).

Decreased water demand from the public service also entails financial issues notably in recouping the infrastructure investment cost. For instance, a **network designed for a certain capacity** would become oversized due to switching to alternative sources. This not only hinders social equity by transferring utility costs to the part of the population which has no access to private water sources, but would also require the adjustment of the size of the pipes<sup>4</sup> which would represent an unbearable cost and could jeopardize some essential activities such as firefighting.

Another economic issue relates to the **waste water not initially supplied as drinking water by public service operators**. The user must pay for it so that the waste water operator can recover the extra costs for its transport and its treatment.

The management of water resources should integrate environmental costs, resource costs and health issues without discrimination of sources, whether public supply or private water sources. At EU level, the appropriate regulation tool is the Water Framework Directive.

## 5. Economic impact of reduced water consumption on water operators

According to the European Commission **the most important cost component is represented by fixed costs (assets), ranging from 60 to 80%**<sup>5</sup>.

This **fixed cost component will still increase in the coming years**. Even though the infrastructure replacement is an ongoing process, the need for further refurbishment of aging assets and/or their expansion because of new demographic, technical and security requirements should be expected.

**Generally<sup>6</sup>, in European cities, 55 to 100% of water operators' income is proportional to consumption**. Too strong a dependence on revenue from variable water consumption may have negative effects for both water operators and the general public: insufficient funds could delay investments in required infrastructure (including meeting EU directives).

The Bucharest case gives a good illustration of this problem: in this city, water consumption dropped by nearly 65% between 1999 and 2015. With no fixed charges

<sup>4</sup> The size of the pipe is determined according to different elements such as water flow, pressure needed for firefighting amongst others.

<sup>5</sup> EC, *Resource and Economic Efficiency of Water Distribution Networks in the EU*, 2013: <http://ec.europa.eu/environment/water/quantity/pdf/Final%20REE%20Report%20Oct%202013.pdf>.

<sup>6</sup> In Ireland, there is still no water tariff at all.



on water tariffs in Romania, water suppliers had to face the full consequences of this drop in consumption.

## 6. Reflection on water tariff structure

A growing **trend in national legislation is to cap the fixed part of the water bill at a low level** to encourage a reduction in water consumption through volumetric tariffs. While this is understandable from a demand management point of view, it is contradictory to the economic reality of water operators in terms of cost structure.

In order to sustainably deliver water services, all costs must be recovered through tariffs, taxes and/or transfers (3T's). Indeed, the right balance between these types of funding can collectively make up the basis for sustainable cost recovery, which must reflect the service's cost structure. The **3T's framework was developed by the OECD** and its application in practice was analysed by EurEau in a report<sup>7</sup>. In addition, connections to public water / waste water networks have a value in terms of private assets that should be reflected in the tariff.

A reasonable proportion of the fixed component in the water tariff would have a number of positive consequences:

Water and waste water operators would have a more stable and predictable revenue to plan investments. In turn this would send appropriate price signals to users on the relationship between water use and water scarcity.

**Ensuring a better alignment of the fixed element of the water tariff** with the fixed cost of providing the service would avoid unnecessary exposure to fluctuations in demand caused by periods of extreme weather. This could lead to more stable bills for customers, as well as a more effective link between the costs operators incur and the revenue they need to cover them.

In parallel, households would pay a price for the services that would reflect the 'real cost', sharing the costs in a **more equitable** way. If necessary, national or local government can set affordability mechanisms for households in difficult economic conditions. In addition, if the fixed element of the bill is low relative to the fixed cost of providing the service, it means the variable element of the bill is more significant. This has a disproportionately high impact on users for whom water consumption for basic needs is high, including some of those who are most vulnerable – for example, large families with young children.<sup>8</sup>

**For industrial uses**, (in particular reservation, seasonal and standby tariffs) where the customer has private supplies but retains the right to use the public supply, **fixed tariff elements should also be considered**. Water and waste water

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<sup>7</sup> Methodological guide on Tariffs, Taxes and Transfers in the European Water Sector, EurEau contribution to the European Regional Process towards the 6th World Water Forum, Final Report for the WWF6 TSG7.2 under the priority target to Improve European Drinking Water and Sanitation Services, 2012.

<sup>8</sup> Member States have different ways of considering water users' conditions in tariff setting. This can also be done through fixed charges e.g. by applying gradual fixed charge categories.

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**Position Paper**



operators should be able to ensure that customers who may rely on the public supply network continue to pay the long term cost of maintaining it, even if they currently use their own supplies. Solutions do exist, such as the 'take or pay' model applied to water-intensive business customers.

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